CONCEPTUAL PROJECT STRATEGY

Overview

The Department's objective is to conduct research, development, and demonstration of a next-generation nuclear power reactor in order to establish advanced technology for the future production of safe, efficient, and environmentally-acceptable power and to demonstrate the economic and technical feasibility of such facilities to the U.S. electric power industry. The Department contemplates the use of a financial assistance vehicle to enter into a cost-shared cooperative agreement with a U.S.-owned private sector organization (the "Project Integrator"). The cooperative agreement would be structured in a manner that allows the Department to evaluate, through the review of required deliverables, the programmatic and technical merit in proceeding to each phase of work. It is expected that the cooperative agreement, while relatively simple at the onset of the project, would grow in complexity as the Project Integrator develops an international consortium and proceeds through the various phases of this project. The Project Integrator would be expected to work with the Idaho National Laboratory to develop and manage research and development plans. The Department expects that most of its early share of the costs will be reflected in research and development led by INL.

Tasks to be performed by the Project Integrator under the cooperative agreement would include:

1. Identify the best-in-class technologies that, when properly integrated, have the potential to meet the Department's system-level objectives. These objectives represent the technology goals for the first commercial plant. The Department recognizes that a pilot facility created as a result of this cooperative agreement may not meet these objectives, but should solve the following technical problems/challenges to allow the commercial facility to meet these goals:

    - Development of a system that can generate electric power at a cost of less than 1.5 cents/kilowatt-hour;
    - Development of a system that can produce hydrogen at a cost of less than $1.50/gallon-gasoline equivalent;
    - Development of a system that will cost less than $1000/kilowatt to construct with a goal of $500/kilowatt.

2. Conduct a broad-spectrum evaluation of relevant technologies identified in the task above and define an integrated technical baseline for the project.

3. Conduct a competition among technology vendors and select two organizations to develop design concept studies of their recommended technologies.

4. Conduct a detailed technical and economic evaluation of the two competing reactor concepts.

5. Recommend a single integrated technical, cost and schedule baseline that is the preferred of the two selected concepts, a concept based on an optimization of the two concepts, or a third, unrelated concept that the Project Integrator believes to be superior.

6. Establish the technical, cost and schedule baseline for the integrated reactor and hydrogen production facility.

7. Assemble an independent panel of experts (possibly through the National Academy of Sciences) to review the recommended technical, cost and schedule baseline.

8. Establish a business plan with required cost sharing from industrial and international partners. Intellectual property rights for all partners will be subject to DOE's statutes and regulations and international agreements as applicable. Intellectual property rights of parties to applicable International Agreements are governed by the terms of the International Agreement.

9. Develop a pre-conceptual design of the preferred baseline.

10. Develop a research plan to identify and address key technology issues requiring demonstration.

11. Develop a conceptual design.

12. Develop a detailed preliminary design.

13. Develop a detailed final design.

14. Obtain all Nuclear Regulatory Commission licensing approvals.

15. Construct the facility.

16. Operate the facility for the purpose of demonstrating the technical and economic viability of the NGNP technology.

DOE expects any agreement to cover all activities related to this project including research and development, design, licensing, construction and operation phases. The agreement also would address issues such as technology rights and private ownership of the NGNP capital assets. The Department expects to engage in negotiations with the Project Integrator to determine the level of cost-share required during each phase of the agreement to assure the success of the project while protecting the interests of the taxpayers.

The Department anticipates that several competitively selected subcontracting partners will team with the Project Integrator to perform specialty work as the project progresses. Under standard DOE Intellectual Property policies and provisions, Intellectual Property Rights (IPR) may be

fragmented among prime contractors and subcontractors. In this regard, the Department seeks comments on how the Project Integrator would expect to manage IPR. DOE is willing to support the agreement with patent waivers and exceptional circumstance determinations, as necessary and determined appropriate by the Department, to assist the Project Integrator in consolidating and/or pooling the IPR. Furthermore, the Department may wish to obtain appropriate rights in contractor/subcontractor IPR to assure continuation of the project in the event of a contractor/subcontractor withdrawal.

Evaluation Criteria

The Department seeks comments on criteria that the Department may use in evaluating proposals for the competitive award of a cooperative agreement(s). These criteria could include (but may not be limited to) an applicant's demonstrated capability to:

1. Successfully manage and complete projects (especially nuclear projects) of similar size, scope and complexity within the past 5 years and provide qualified project personnel with demonstrated capability, experience and certifications;

2. Manage and integrate the research, development, design, construction, licensing and operation of the NGNP;

3. Manage projects within cost and schedule;

4. Objectively evaluate the attributes of competing technology concepts without conflict of interest arising from commitments to or financial interests in the corporate sponsors of those concepts;

5. Organize an international team capable of achieving the Department's objectives;

6. Negotiate all business agreements, including technology licenses, cooperative sub-agreements, and any other contractual instruments necessary to allow the construction and operation of the resultant design; and

7. Lead the commercial deployment of the resultant design in the United States.